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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,768

12/13/2006

Hiroshi Shinoda

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8646

38327

7590

11/12/2008

REED SMITH LLP

3110 FAIRVIEW PARK DRIVE, SUITE 1400

FALLS CHURCH, VA 22042

EXAMINER

GALT, CASSI J

ART UNIT

PAPER NUMBER

3662

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,768	Applicant(s) SHINODA ET AL.	
	Examiner CASSI GALT	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figures 12 and 13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartzstein (US 2005/0285773) in view of Brown (US 5,880,695) and further in view of Boyer (US 5,275,880).

Regarding claim 1, Hartzstein teaches an automotive radar (para. 2) comprising an antenna (34, Fig. 2) that radiates linear polarized radio waves (para. 105 lines 6-8), a slit plate (102, Fig. 3C) placed in front of the antenna, and a transceiver (Fig. 2) that supplies transmit signals to the antenna and, from received reflection waves detects a direction in which an obstruction exists (para. 45-46).

Hartzstein does not teach:

(1) radio wave absorbers provided between the antenna and the slit plate. However, Hartzstein teaches that slit plate 102 is formed on the surface of a radome (100, Fig. 2), and Brown teaches an antenna system wherein absorber material (56) fills a tunnel (54) between antenna elements (58) and a radome (62) for the purpose of reducing side and back lobes of the antenna elements (col. 2 lines 30-32). It would

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have been obvious to modify Hartzstein by providing a wave absorber between the antenna and the radome, and therefore necessarily between the antenna and the slit plate, that absorbs radio waves being radiated in a direction orthogonal to a forward direction of the antenna in order to reduce side and back lobes of the antenna.

(2) wherein at least one of the absorbers is backed with a second metal plate. However, Boyer teaches that an absorber backed by a conductor is a well known construction sometimes known as a Dallenbach construction (1:57-60), wherein the conductor reflects microwaves that have not been fully absorbed back into the absorber for further absorption (1:55-57). It would have been obvious to further modify Hartzstein by backing at least one of the absorbers with a metal plate in order to enhance the absorption of side and back lobes.

Regarding claim 2, Hartzstein teaches that the longitudinal direction of the slits is orthogonal to the direction of co-polarized waves radiated from the radiating element (para. 18 lines 3-6).

Regarding claims 4 and 5, the wave absorber taught by Brown clearly blocks radiation in top and bottom directions, and in a horizontal direction, as it surrounds the entire periphery of the antenna (see Figs. 2 and 3) for the purpose of reducing antenna side and back lobes (col. 2 lines 30-32). It would have been obvious to further modify Hartzstein by providing a wave absorber that blocks radiation in a top and bottom direction, and in a horizontal direction, in order to reduce side and back lobes of the antenna.

Regarding claim 6, Hartzstein teaches a radome (100) which Fig. 3B shows covers the antenna (34) and slit plate (102).

Regarding claim 7, Hartzstein teaches that at least one surface of the slit plate is brought in contact with the radome (para. 108 lines 5-8).

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Regarding claim 8, Hartzstein's Fig. 3B makes it clear that the distance between the radome (100) and the antenna (34) is larger than the distance between the slit plate (102) and the antenna (34).

Regarding claim 9, Hartzstein teaches an automotive radar (para. 2) comprising an antenna (34, Fig. 2) that radiates linear polarized radio waves (para. 105 lines 6-8), a slit plate (102, Fig. 3C) placed in front of the antenna, and a transceiver (Fig. 2) that supplies transmit signals to the antenna and, from received reflection waves detects a direction in which an obstruction exists (para. 45-46).

Hartzstein does not teach:

(1) radio wave absorbers provided between the antenna and the slit plate to absorb radio waves being radiated in a direction orthogonal to a forward direction of the antenna. However, Hartzstein teaches that slit plate 102 is formed on the surface of a radome (100, Fig. 2), and Brown teaches an antenna system wherein absorber material (56) fills a tunnel (54) between antenna elements (58) and a radome (62) for the purpose of reducing side and back lobes of the antenna elements (col. 2 lines 30-32). Brown's Fig. 3 shows that absorber material 56 will absorb radio waves being radiated in a direction orthogonal to a forward direction of the antenna. It would have been obvious to modify Hartzstein by providing a wave absorber between the antenna and the radome, and therefore necessarily between the antenna and the slit plate, that absorbs radio waves being radiated in a direction orthogonal to a forward direction of the antenna in order to reduce side and back lobes of the antenna.

(2) wherein at least one of the absorbers is backed with a second metal plate. However, Boyer teaches that an absorber backed by a conductor is a well known construction sometimes known as a Dallenbach construction (1:57-60), wherein the conductor reflects microwaves that have not been fully absorbed back into the absorber for further absorption (1:55-57). It would have been obvious to further modify Hartzstein by backing at least one of the absorbers with a metal plate in order to enhance the absorption of side and back lobes.

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Regarding claim 10, it is clear that Brown's absorber blocks radiation in a top and bottom direction, and absorber material 56 completely surrounds antenna elements 58 (see Figs. 2 and 3).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartzstein (US 2005/0285773) in view of Brown (US 5,880,695), Boyer (US 5,275,880), and Kakizaki (JP 2001127523).

Regarding claim 3, Hartzstein does not teach that the distance between the antenna and the slit plate falls within $1/8$ to $1/2$ wavelength at a frequency used by the radar. However, Hartzstein teaches that slit plate 102 is formed on the surface of a radome (100, Fig. 2), and Kakizaki teaches a radome designed such that the distance between the radome and an antenna is $1/2$ to $1/4$ the center frequency of the antenna (translated ab. lines 1-3) in order to achieve highly efficient radiation of power (translated ab. line 8). It would have been obvious to modify Hartzstein by placing the radome, and therefore the slit plate, at the claimed distance in order to achieve highly efficient radiation of power.

Response to Arguments

5. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CASSI GALT whose telephone number is (571)270-1469. The examiner can normally be reached on Mon-Fri 7:30AM-5:00PM, Alt. Fri, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/C. G./

Examiner, Art Unit 3662

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662